

### ABSTRACT

A production method of a biogas of the present invention comprises carrying out hydrogen fermentation of a subject solution containing organic matter with the use of a hydrogen fermentation microorganism, in which according to a correlation between a concentration of a predetermined substrate in a liquid to be processed containing an organic matter and a rate of consumption of the substrate by a hydrogen-fermenting microorganism a maximum tolerable concentration of the substrate consumable by the hydrogen-fermenting microorganism is determined in advance and in which in the actual hydrogen formation step, the concentration of the substrate in the liquid is maintained at one not higher than the maximum tolerable concentration. According to the production method of a biogas of the present invention, hydrogen fermentation can be performed sufficiently smoothly without any treatment of the material involving consumption of thermal energy such as heating/warming.